PATHOLOGY AND BACTERIOLOGY.

UNDER THE CHARGE OF
SIMON FLEXNER, M.D.,
DIRECTOR OF THE ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH, NEW YORK.
ASSISTED BY
WARFIELD T. LONGCOPE, M.D.,
RESIDENT PATHOLOGIST, PENNSYLVANIA HOSPITAL, PHILADELPHIA.

Physiology of the Thyroid Gland.—KISHI (*Virchow's Arch.*, 1904, Band clxxvi. p. 260) describes a series of observations dealing with the extirpation of the thyroid gland in animals and upon the metabolism and the pathological changes in the various organs of thyroidectomized animals. From a study of the parathyroid glands after extirpation of the thyroid itself, he believes that the parathyroid is not an independent organ, but an embryonal thyroid rest, and under certain circumstances may be transformed into thyroid tissue. Dogs and cats often die after thyroid extirpation, even though the parathyroids are left intact. If the thyroid gland is normal the parathyroids are functionless, and they exert a function only when the thyroid is entirely removed or when that portion of the gland which remains is not sufficient to sustain life. When the quantity of parathyroid is equal or exceeds the quantity of thyroid necessary to sustain life a thyroidectomized animal does not die.

It was further found that in thyroidectomized animals metabolism was increased, while there was no change in control animals in which the thyroid gland had simply been exposed at operation. The amounts of nitrogen, sulphuric acid, phosphoric acid, and uric acid eliminated in the urine followed the same curves. The chloride excretion was very irregular.

The changes in the organs of the thyroidectomized animals were confined chiefly to the blood and bloodvessels. A direct result of thyroid extirpation was a decrease in hæmoglobin and red blood cells. The alterations of the other organs described by many authors was thought to be of secondary nature.

The author concludes from these studies that the thyroid is a secretory organ, and neutralizes within the gland an albumin that is injurious to the blood. This toxic substance is a variety of nucleoproteid derived from the cell nuclei of food. In the glandular cells of the thyroid an iodine containing globulin is formed, which possesses an attraction for the albumin of the toxic nucleoproteid. These two substances in combination are eliminated from the cells into the follicles as a third substance which the author calls "thyreotoxin." Thyreotoxin is split into two harmless products which gain access to the lymphatics and bloodvessels, and are thus eliminated.

Researches upon Chronic Passive Congestion of the Liver.—HART (*Ziegler's Beiträge*, 1904, Bd. xxxv. p. 303) has examined the liver in 35 cases of advanced central red atrophy. He finds constantly in this condition thrombosis of the capillaries toward the central portion of the liver lobule. The capillary plugs are to be seen as soon as the degeneration of the liver cells makes its appearance, and the extent of the thrombosis is in direct proportion to the degeneration of the liver cells. The production of the thrombi forms a new argument in favor of Schmidt's theory concerning the relationship between fibrin coagulation and cell degeneration.

Upon the Properties and Production of Anticrotalus Venin.—FLEXNER and NAGUCHI (*Journal of Medical Research*, 1904, vol. xi. p. 363) have shown in previous studies that the severe local lesions (mainly hemorrhage and softening of the tissue) which follow injections of rattlesnake venom are produced in large part by a cytotoxin which destroys the endothelial lining of the bloodvessels. To this toxin they have given the name of hemorrhagin. Owing to the difficulty in overcoming these local effects of the venom no successful production of antitoxin for rattlesnake venom has so far been accomplished. The present work deals with a method of surmounting this difficulty. By treating the crotalus venom with dilute hydrochloric acid or iodine trichloride, the locally active principles could be transformed into toxoid substances. This modified venom, though deprived of a large part of its toxicity, still preserved its power to set up antivenin formation in the rabbit and dog. Thus, by injections of this modified venom an antivenin of considerable activity against rattlesnake venom could be procured. While the toxophore group of hemorrhagin was primarily attacked by the weak hydrochloric acid and iodine trichloride, both the toxophore and cytophilic haptophore groups were destroyed by strong hydrochloric acid and hydrochloric acid and pepsin, thus rendering the substance useless for antivenin production. Iodine trichloride destroyed both the groups in the neurotoxins and hæmolysins of cobra and daboia venoms.

Anticrotalus venin was found to be without appreciable antitoxic power over cobra and daboia venoms, and of imperfect antitoxic power over water moccason venom. This was in keeping with the different constituents of these venoms, for the first two owe their toxicity to neurotoxins and hæmolysins, the last to these principles together with hemorrhagin.

Precipitins were formed from venom along with or independent of the immunizing principles for venom, but there was no relation between the degree of protection afforded and the amount of precipitins present in the immune serum. The precipitins for the different venoms were highly though not absolutely specific.

Notice to Contributors.—All communications intended for insertion in the Original Department of this JOURNAL are received only *with the distinct understanding that they are contributed exclusively to this* JOURNAL.

Contributions from abroad written in a foreign language, if on examination they are found desirable for this JOURNAL, will be translated at its expense.

A limited number of reprints in pamphlet form will, if desired, be furnished to authors, *provided the request for them be written on the manuscript.*

All communications should be addressed to—

DR. FRANCIS R. PACKARD, 1831 Chestnut Street, Philadelphia, U. S. A.